

Climate Data Art Project

Adapted from the NGSS resource ["Next Generation Climate"](#)

[Most recent student work](#) (Jan '24)

Objectives:

To analyze graphical information about climate change.

To deepen your understanding about the causes and effects of climate change.

To deepen your understanding about the human connection with both causes and effects of climate change.

To practice communicating about data to the general public.

Procedure:

Part 1: Data Reading and Interpretation

- Each team is given a color copy of one of the graphs from [this set](#).
- Tape your data set into the middle of a piece of chart paper, and mark up the graph as a team. Leave a blank space of about $\frac{1}{4}$ of the paper (for part 2 below).
- Questions they should answer through their annotations on the chart paper:

A. What?

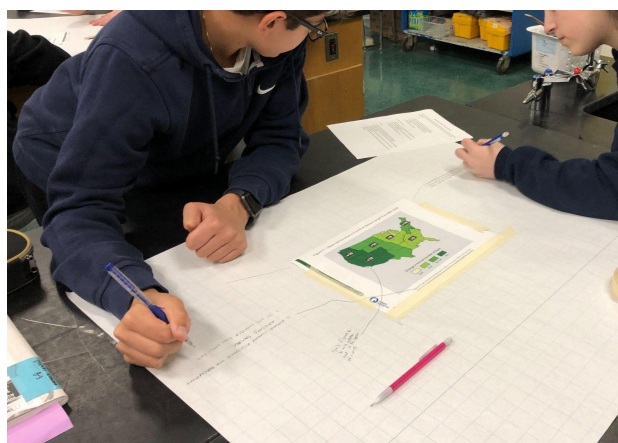
1. What is the first thing that you notice about this figure?
2. What kind of figure is it? (Bar chart, line graph, scatter plot, map, etc.)
3. What are the titles of the axes or of key? What do you think the axes or key are showing?
4. What are the intervals on the axes or key? What units are being used? What is the range of data?
5. Do you see any obvious trends?

B. Who, When and How?

1. What organization or people collected and published the information?
2. When was the data collected?
3. How do you think scientists collected this data? (scientific instruments, scientist's eyes, citizen's eyes, traveling, other)
4. Is this data reliable (able to be trusted)? Why?
5. If it is missing, create a Legend for this chart.

C. So What?

1. What are two things about this figure that you find interesting?
2. What questions do you have about this figure? Think of at least 3.
3. Write down a question that you would ask the creator of the figure or the researcher behind the information.



4. How does this data fit into the “big picture”? In other words, how does it connect to other climate data?
5. Write one sentence about what you think this figure is presenting (include specific data from figure).

When you are finished with Part 1, take a photograph of your work and upload it to the “Climate Data Art Project” sub-folder.

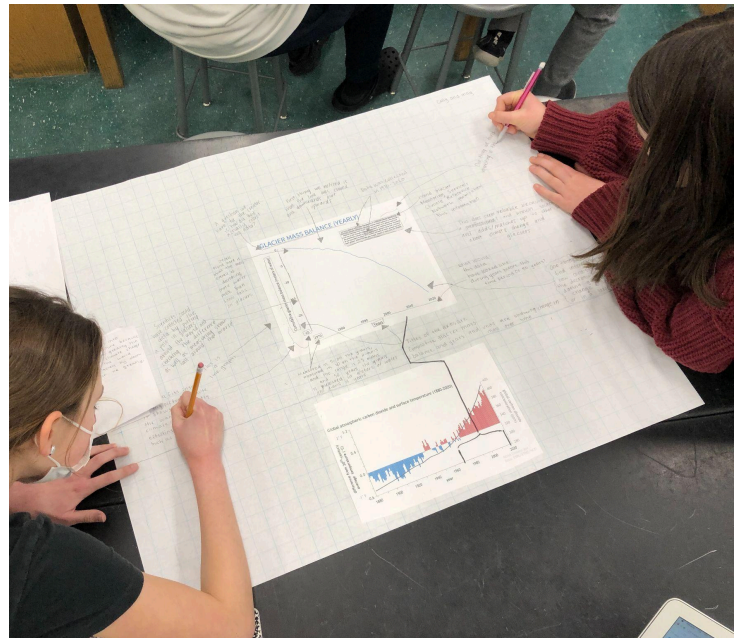
→ Then submit this image through Canvas.

Part 2: Connecting one set of data to the larger picture

Now, attach [this Surface Temperature and Atmospheric Carbon Dioxide Graph](#) to your chart paper in the blank space. Then annotate the graph and answer these questions:

A. What?

1. What is the first thing that you notice about this figure?
2. What kind of figure is it? (Bar chart, line graph, scatter plot, map, etc.)
3. What are the titles of the axes or key? What do you think the axes or key are showing?
4. What are the intervals on the axes or key? What units are being used? What is the range of data?
5. Create a Legend for this chart.
6. Do you see any obvious trends?

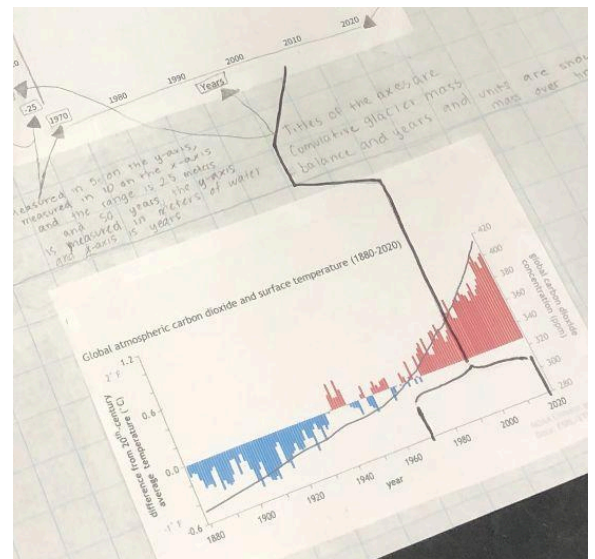


B. Who, When and How?

1. What organization or people collected and published the information?
2. When was the data collected?
3. How do you think scientists collected this data? (scientific instruments, scientist’s eyes, citizen’s eyes, traveling, other)
4. Is this data reliable (able to be trusted)? Why?

C. So What?

1. What is the cause of the temperature rise?
2. Write a couple of sentences to answer this question: How do scientists use the Greenhouse Effect model to



explain the connection between the two sets of data presented in this graph?

(In your answer, use the words *visible light*, *infrared light*, *absorb*, *greenhouse gasses*.)

3. How does this graph connect with the data set you were given in Part 1?
4. What *feedback mechanisms*, if any, do you think might be at play as you look at Parts 1 and 2 together?

D. Show, using arrows and/or lines, where the time frame of the first graph fits into the horizontal axis of the Temperature and CO₂ graph.

Create a short title (less than 10 words) that you think encapsulates the *story* of the data set you were given in part 1.

When you are finished with Part 2, take a photograph of your work and upload it to the “Climate Data Art Project” sub-folder.

→ Then submit this image through Canvas.

Part 3: Looking for connections. Using additional data.

If we assume a connection between your topic and rising CO₂ and Temperature levels, how might you explain that connection? What additional data might help you see if your idea is correct?

- A. Create a statement that presents a hypothesis about what you think is the connection between your topic and rising CO₂ and Temperature levels.

Write this up and add it to your poster.

- B. Now consider: What additional data could you find that might support this hypothesis? Below your statement, indicate what additional data set(s) might help you learn if your hypothesis is correct.
- C. Next, you will search for, or be given, data that you think might help you see whether your hypothesis is correct. Graph that data in Google Sheets. As you plot the data, consider the best ways to display the data.

Go to this [EPA Climate Indicators site](#) and search for the set of data you came up with.

An additional resource is [climate.gov's data gallery](#).

Download the data as a .csv file that can be brought into Google Sheets.

Open the file in Google Sheets and create a chart of the data.

You'll need to decide the best way to represent this data:

1. What type of chart is best for this type of data?
2. What colors and/or symbols will you use?

3. What's the best way to label the axes?
4. What's the best scale to use, especially when comparing it to the other data you have?
5. Can you graph this on the same graph as your other data? Would that make sense? (Note: for some of your data sets this is not possible.)
6. What's the best TITLE for your graph?

E. Add this graph to your poster. Add paper if needed.

F. Annotate this graph with:

1. What are two things about this figure that you find interesting?
2. What connections exist between this data and the other two datasets on your poster?
3. Write one sentence about what you think this figure is presenting (include specific data from figure).
4. Does this graph help confirm your hypothesis above? Explain.

When you are finished with Part 3, take a photograph of your work and upload it to the "Climate Data Art Project" sub-folder.

→ Then submit this image through Canvas.

Part 4: Studying Climate Art and Preparing to Create your Climate Art Piece

As a group, you will consider ways to use the data to

- (a) tell an effective story,
- (b) elicit an emotional response, and
- (c) provoke action.

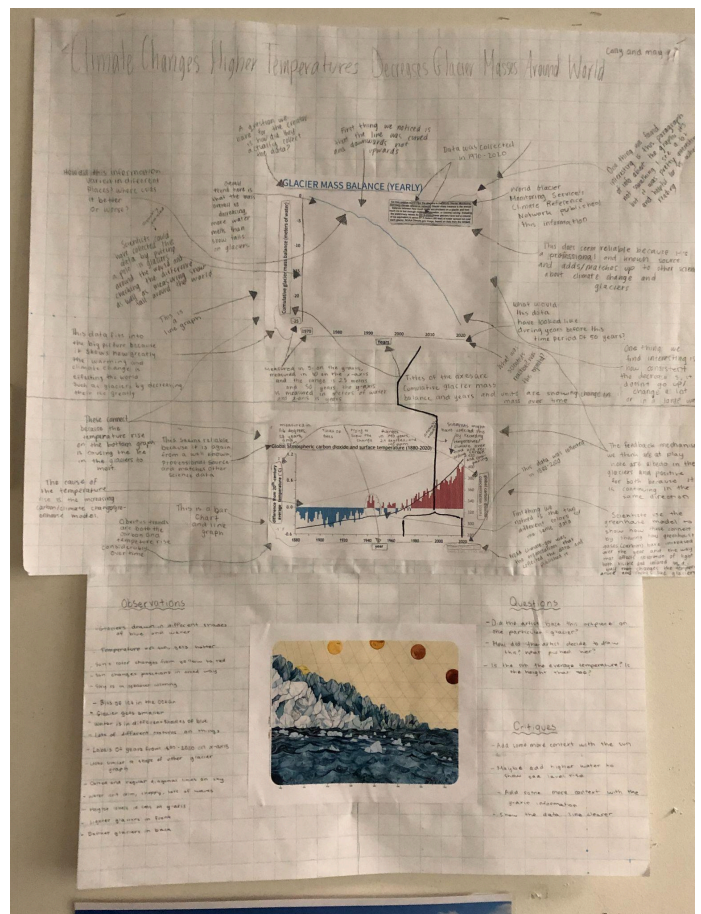
1. Brainstorm ways of showing your data that would help show the impact to other students.

- Consider the *media* you'd like to use. Your artwork must be able to be hung flat on the wall, but be creative as you think about what types of media you can incorporate - paint, collage, etc.

2. Watch [this video](#) by artist Jill Pelto where she describes her process of mixing Science and Art. (Also available in [this EdPuzzle](#) version.)

3. Use these guiding principles to create your work:

- Tell the story
- Elicit an emotional response



- Provoke action
4. When you are done, you will be creating a Google slide show to document your process and a short screencast. [Here's a template](#) you should use. Feel free to adapt it but keep the general framework in place.
 5. Write a script to accompany your slide show.
 6. Finally, create a screencast of your slide show using the Google slides and your script.

EXAMPLES:

[Click here](#) to see examples of finished artwork students created. Click on each image to see a high resolution version. Also below each artists' statement is a link to their screencast.

Additional resources:

- ["Cambio a Flor de Piel"](#) - an amazing video that visualizes climate proxy data through the use of painted hands (in Spanish with English subtitles).
- NY Times ["Teach About Climate Change With These 24 New York Times Graphs"](#)
- NY Times ["How Does Your State Make Electricity?"](#)
- Science Friday - ["Using Art to Enliven Scientific Data"](#)

